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VOL. VI.—NO. 2. NOVEMBER, 1897.

THE
Geelong Naturalist.

JOURNAL OF THE

Geelong Field Naturalists' Club.

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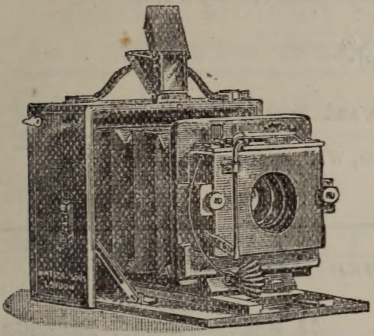

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The Editor is not responsible for the statements made in any paper.

All articles should be written on one side of the paper only, and all scientific names should be CORRECT *and* LEGIBLE.

All communications in reference to "The Geelong Naturalist" should be addressed to the Editor, Mr G. H. Adcock, F.L.S., Mechanics' Institute, Geelong, and all communications in reference to other matters should be addressed to the Hon. Sec., Mr A. B. F. Wilson, Mechanics' Institute, Geelong, Victoria, Australia.

We would respectfully request that all Publications, Specimens, &c., intended for the Club, should be addressed and forwarded to the Hon. Sec. direct, who will acknowledge the receipt of the same without delay.

NOTES.

The Hon. Librarian begs to acknowlege the following with many thanks:—

Abstract of Proceedings, Linnean Society, New South Wales, for August, September, October, 1897.

Also Donation of Specimens from J. C. Taylor, Esq., and J. E. Pittock, Esq.

The Editor invites communications on any subject connected with Natural Science.

Members are notified that the Meetings of the Club are now held in the Geelong Mechanics' Institute every alternate Tuesday evening, 7.45 p.m.; the Committee are to be congratulated on securing the large Class-room of the Institute for the meetings, it being both more central and convenient.

WHAT GEOLOGY TEACHES.

By J. F. Mulder.

[A Paper read before the Geelong Field Naturalists' Club, October, 1897.

After briefly reviewing "What Geology Teaches," and how we are enabled to arrive at the various conclusions, Mr. Mulder went on to say:—When viewing our shell beds of eocene age, we are forced to the conclusion that they were formed in two different ways, viz:—either on a gradually sinking or gradually rising sea-bottom. The Eagle Rock at Airey's Inlet rests on basalt, which appears to have been the sea shore of the eocene sea, as even the fossil limpets are mixed with cowries and other shore loving shells, such as we find around our present rocky coasts. These gradually make way for deeper sea forms, until the whole of the superior rocks consist of nothing but polyzoa, terebratulas and echinoderms, enclosed in the limestone of the district. It is quite probable that when the basalt was the shore at the Eagle Rock, the coast around Spring Creek was low lying land, favourable to the deposition of mud on which shells lived. The gradual lowering of the land would then account for the great depth of this deposit; the coast at Eagle Rock being a rocky one, no depth of littoral shells is found. At Spring Creek the polyzoal rock does not overlie the littoral deposits as at Eagle Rock, and the reason of this requires more study. But we can scarcely doubt this portion of our coast shell deposits was built on a lowering land, for we must remember that the shallow water shells underlie the deeper sea forms at Eagle Rock. One noticeable feature of the Spring Creek bed, is that the fossil shells shew, according to Prof. Tate and J. Dennant, a greater percentage of miocene shell than some others of our eocene deposits, which of course would make it slightly younger.

Birregurra township is, as the crow flies, about 10 or 12 miles north-west from Spring Creek. Standing on the highest point at Birregurra, and looking from there towards the sea coast, we can trace a valley of depression with several ancient mouths or openings leading to the sea. One of these mouths occurs at Airey's Inlet, another tends to Spring and Bream Creeks. At several points in this low-lying area, where the water has cut through the fresh water drifts and gravel beds, it has exposed the underlying polyzoal rocks; as for instance on Hopkin's station near the bridge, at Laketown, about half-way between Birregurra and Spring Creek, and on Ingelby station about 5 miles south-west from Birregurra, about half a mile up the river, the fossil bed known as Bowden Point, stands on the edge of the valley aforementioned, and at a distinctly higher level than the exposure of the limestone rock, which may possibly indicate that it is younger than the beds beneath (the limestone). The evidence of the fossils found, supports this conclusion, there being a greater percentage of miocene forms in this bed than in most of the others. At Spring Creek there is apparently a small deposit of similar shells, which occupy a higher level than the principal beds, but these shells are chiefly fragments washed down the face of the cliff after rains. There cannot be much doubt that the Birregurra, like the Belmont bed, was deposited on a rising sea bottom. In regard to this last bed, my notes taken at the time, are that some of our townsmen, thinking to find fire clay, set men to work to sink a shaft on the highest portion of the hill, about 20 chains on the west side of the Colac Road, in a paddock, which in the celebrated boom time was styled

"New Geelong." After sinking between 20 and 30 feet through soil and clay, they came on a bottom of polyzoal limestone, the same as that at Pakington Street, Belmont North. This shaft we will call No. 1. Failing to find the fire clay, they moved further down the hill, and close to the Germantown Road, they sank shaft No. 2. Here, after passing through surface soil, 5 feet, and then yellowish sand with a few shells, they came on a light grey clay full of fossils, which continued for 35 feet, when there succeeded 10 feet of black silty clay also full of fossils. At 50 feet they came upon a very hard band of light grey stone, full of bivalves, probably an ancient sea beach, underlaid by 5 feet of yellow limestone, with the same shells as the deposit last mentioned. Below this came 8 feet of a lighter silt, then 2 feet of hard grey rock, resting upon 2 feet of sandy clays, when they bottomed on the polyzoal rock of the district. This was at about 72 feet from the surface, while in No. 1 shaft, the same rock was reached at 30 feet, which gives a slope of 42 feet in about 60 chains. Upon this sloping sea beach were deposited the bivalves and gastropods of that age, and they have been carried upward on the gradually rising land, until they have reached their present position.

The finding of a miocene marine deposit at such a height above sea level—I do not know the exact height, probably not less than 200 to 250 feet—(the Shelford deposit is 150 feet above river level), Messrs Hall or Pritchard do not give the height (at least I did not notice it in their report on the Moorabool miocene) shews the miocene sea had a good share in cutting out the valleys of the Moorabool and Leigh, the tides could not flow in and out for so many years without doing a considerable amount of work, and perhaps leaving their deposits of shells on the then sea beach, as the eocene sea did on the limestone of Belmont and Birregurra and the basalt of Curlewis. Then again I would like to point out the finding of one layer of shells above the other does not necessarily make the bottom the oldest if it was a lowering land when they were placed in position the bottom portion would be the first laid down, but if a rising land, the top would be the oldest. As in the raised sea beaches along our shores composed of recent shells as well as fossil the highest line of recent shell was first laid down, the youngest that being deposited now. Let us think what Hobson's Bay will be like in a few thousand years if the land continues to rise as it appears to be doing; the shells that are living now will then be on top, and those deposited after at the bottom. I should like to point out to those members of the Club who take an interest in geology, the three questions we should try and settle during the coming season—First, visit the miocene at the Viaduct, put a short tunnel into the hill and find if possible its extent and prove what is the older the shell deposit or the basalt. The next question is, which is the older, the Lara limestone or the basalt adjoining, the limestone we know is plicoeen and if the basalt overlays, it must be younger. The third question is that old volcano, Mount Duneed, is it miocene or pliocene, if we could find either fossil shells or bones overlying its age would be fixed, and the Club would reap the honor of having settled a long disputed question. In conclusion I may say I have often met people who think when they see a man hunting after old rotten shells and bones that he is a species of lunatic, they do not know that he is hunting after the knowledge of the past which fossils alone will give him, independent of that he values them no more than the majority of mankind.

ECONOMIC ENTOMOLOGY.

[*Some of the advantages to be derived from its study.*]

By C. French, Esq., F.L.S., F.R.H.S., Government Entomologist.

(Continued from last issue).

I well recollect my early horticultural training, when, in the winter, we used, after the day's work was finished and around the fire at night, either do much of our grafting, budding, label-making, writing, preparing cuttings, etc., with our instructor by our side, and on such occasions he would read to us, that is when we thought proper to behave ourselves, from the works of Hogg, Loudin, Paxton, Kirby and Spence and others of the grand old books, and these books from the various instructions therein given, have been the key to the success of some of the cleverest gardeners and horticulturalists the world has ever produced. Thus many an instructive evening was in endless pleasure (I allude to pleasure with profit) passed by those learning the profession when such things as keen competition, bonuses and eight hours' labour were practically unknown. Our young man may now be supposed with the aid of a few pounds in cash, and a fair stock of common sense, diligence, and a set of modern garden appliances, etc., to have made a fair start. His trees have been well selected from advice supplied probably by our old friend Neilson, or other experts. The chemist, we will suppose, has been asked to furnish some particulars as to the soil and its constitutent parts, and the work may be said to have fairly commenced. The trees appear to be thriving well, when lo! our friend detects something wrong, and his trees, which are either looking sickly or display signs, which to the practised eye are not to be mistaken, of some pest more or less insidious in its attacks upon the tree. What is best to be done? The grower being in somewhat of a dilemma, determines to seek advice, either from his books or from those whom a paternal Government has appointed for such work. He sends down specimens, obtains the necessary information, and all appears to be going along smoothly. It is here where a practical knowledge of these matters makes itself apparent. He discovers, for example, that his peach trees are covered with little brown insects with long antennæ (or horns) and with two projections from the extreme end of the body. Now the person who does not know, or who has not read anything about the nature and habits of this pest, often says to himself—"Ah! I have heard somewhere of Paris green. I will give my trees a good dose, and so surprise our little brown friends." He gets the Paris green, Hellebore, or London purple, as the case may be, and with it he sprays his trees. The result is he finds the aphids there as usual and not in the least concerted by what he considers to be his remarkably ingenious device for their destruction. You will probably wish to know why and how this is? I will endeavour to tell you. The aphids, as well as the large family of so called "plant bugs," are wholly suctorial in their habits, that is they have a rostrum or beak with which they pierce the bark of the tree, and by this means the sap is extracted or sucked out. It will thus be seen that such useful preparations as the arsenical compounds—Paris green, London purple, &c., are of little or no avail against such pests, as their proboscides or beaks are then far out of reach of such applications. The man who has studied the habits of these insects for himself knows this much, and proceeds to destroy the hordes of little insects by spraying with a liquid that will kill by coming into contact with them. I need hardly tell you what to use as this has already been explained in both Parts I and II, of my handbook, of which you doubtless have copies. You will thus see that by making a study of the subject you can save a great deal of useless experiment, and devote the time which such entails in work of a more profitable nature. We will suppose the aphids on the branches to have been disposed of, no easy matter, as you probably know; when lo! next morning we find countless numbers swarming up the stems of the trees. It is then that the man who neither reads nor observes for himself would doubtless say—"Why those that I sprayed yesterday have recovered and are as lively as ever." But the careful grower will examine with his lens the parts of the trees sprayed with the proper material, and will thus satisfy himself, as to the efficacy or otherwise of his attempts to destroy them; and if successful, he would look over the tree for further indications of their presence. The trained man knows the insects are also on the roots, where they hybernate, as well as on the rest of the tree. He at once comes to the conclusion that he must first strike at the "root" of the disease. Whereas the man who knows nothing of the subject, and probably cares little either, proceeds to lament, and not infrequently winds up by chopping out his trees and returning to the city with the melancholy wail that any attempt to grow fruit in Victoria must end in failure. When one goes on the land, whether it is for the purpose of growing anything—from wool to special products—he will find that there are many leisure moments which may be profitably spent in the interesting and useful study of economic entomology. Laying aside the marvellous provisions which nature has provided many even of the simplest insects with the means of maintenance, the study is both useful, intellectual and delightful. We will suppose that a grower comes upon an insect eating the epidermis or covering of the leaves, from his fruit trees, and thereby admitting the direct rays of the sun at a time when such may not be desirable. If he has a well-trained eye, and even a slight knowledge of the subject, he will naturally think to himself, well I will poison these leaves, and when the insects eat the tissues they will be destroyed. He gets out his sprayer, gives the tree a liberal spraying with one of the arsenites or other compounds recommended, and in a few hours he finds his caterpillars dead under the tree. His knowledge that the leaves had been attacked by insects which were not suctorial had therefore been of some practical use to him. As an example (one of a great many which might be given if time permitted) of "how not to do it," we will take the case of a grower. I have seen many such, who whilst either digging, ploughing or planting, kept a gun near at hand. Ask him why he carries a gun, he will probably reply—"to shoot the magpies destroying my crops." It has probably never struck him that our common bush magpies (both kinds) although they will occasionally eat a little grain, grapes, &c., are amongst the most valuable of our native birds. They follow the plough and spadesmen, picking up such grubs as may be turned up from the soil, and are the faithful friends and companions of the ploughman. Our old friend, the Laughing Jackass also comes in for his share of abuse and persecution from the ignorant and unthinking. I have seen many of these birds shot just because they happened to be perched on some high tree in or near the orchard. Again, that beautiful, harmless, and strictly typical Australian bird *Menura superba*, the well-known Lyre-bird of our gullies, has in the most systematic manner been hunted down and killed, so that the few remaining ones have been driven back into the deep recesses of our mountain gullies. Surely this must be something worse than ignorance on the part of those who, by practice and observation, ought to know better. Still many of the "pot shotters" might, if the nature and economy of this bird were properly explained to them, be induced to see the error of their ways, or by a little gentle persuasion, as the following anecdote will show, be compelled to pay dearly for their love of indiscriminate shooting. A few months since two very fine specimens of the native turkey or bustard made their appearance in a certain district not many miles from Melbourne. Here was a chance for the so called sportsmen. Away they went even after a proclamation to protect the turkey all the year round had been issued by the Commissioner of Customs, at the request of myself, and kindly supported and forwarded by Mr Martin, Secretary for Agriculture. Back in triumph (which however was short-lived) they came with the two identical turkeys, which they had shot as expected. All appeared to be going along smoothly until they chanced to meet the local policeman, who promptly and most commendably summoned them to the court. They were fined £5 each, with costs, for shooting the turkeys. The birds were confiscated, and were probably eaten and enjoyed by the policeman and his family.

Many of you will no doubt recollect the serious outbreak of Phylloxera that years ago occurred in this district and for which we were then totally unprepared. Owing, however, to the prompt action of the Government of the day, it was quickly, and let us hope permanently eradicated. Now unfortunately we have to face a somewhat similar visitation at Bendigo, not very widely spread, let us hope; and as one of our greatest industries, that of wine and grape growing in all its branches is threatened, it behoves all of us whether teetotallers or otherwise, to unite and make common cause against this dreadful scourge of this or any other country. When the Phylloxera comes along, it comes to stay, as our American friends put it; and thus measures, however stringent they may be, should be adopted to check it. We know now at least something of the aerial as well as the root forms of this wonderful little insect, and this knowledge has enabled those living in the great wine producing districts of Europe and elsewhere to bring into use the various means that have been there tried for its eradication, and as these remarks are condensed and published in Part II of my book every vigneron should read the descriptions, so that many senseless scares about the reappearance of Phylloxera might be avoided. When the great scourge of locusts took place in Africa, and later on in America, Cyprus and even some of our own colonies, little was known of their life-history, although the plague is of such ancient origin. Now-a-days, however, the inhabitants of these countries have been able, by a patient and exhaustive study of these insects, in many instances to have been partially successful in coping with what appeared to be a singularly hopeless task. It was found that there were two special periods at which the locusts could be successfully attacked. First when in the egg-stage and secondly in the newly hatched or "hopping" stage. The former is accomplished by collecting the eggs, the authorities paying the collectors a certain sum per bushel for the same. The second plan consists in driving the young locusts, which were found by observation to be travelling always in one direction, into screens and pits prepared for the purpose.

When the young locusts are hatched they travel for a few days in a circle, and after having gained sufficient strength they commence their onward march in the one direction. During their march they eat up every living plant that they can manage to digest. They have a marvellous appetite, and when in the winged state will devastate the whole face of a country in no time. The screens as shown in working order, often extends for hundreds of miles over rivers and high mountains, and where labour is of little value, monetarily speaking, the number of locusts destroyed by means of these screens is simply beyond all attempts at calculation. In Australia, however, I am afraid that until the interior becomes more settled, and partly owing to the comparatively high price of labour, an attack on such magnitude as those which have taken place in the countries mentioned, will be well nigh impossible. At present we in Victoria know a good deal concerning the life history of these pests, and partly for the purpose of refuting a statement that our Department of Agriculture was, on a certain occasion, too late in taking action, I obtained freshly deposited eggs of the locust and had them hatched artificially. After making allowances for the difference in temperature, etc., I found that we had a good two months between the hatching out of young locusts, and the time when they assumed the winged stage, and in which the insects could be attacked before taking flight. These experiments which I undertook principally in defence of the Department, but partly for my own information, conclusively disproved the assertions that had been circulated that the Department had been dilatory in the matter. It also proved that it had done its best to induce the settlers to band together for the destruction of their common enemy. In the early part of last year I received several large green caterpillars said to be doing great damage to the vines in many parts of the colony. In some instances they were described to me as "horrid things with a horn sticking out of their head," (the so-called horn I may say, is on the other end), "and that when handled they would spit and fly back." I was, of course, anxious to interview this "monster," when to my astonishment it proved to be the larva of silver-striped hawk-moth, an account of which you will find in Part II of my handbook. Now if these good people had only taken the trouble to rear one of these grubs into the perfect insect, they would then have had a practical aquaintance with at least a part of the life history and habits of one of the worst caterpillars of our vineyards. How often it has happened that a traveller, who, by stress of weather or from other causes, has been unable to accomplish the business for which he had left home and has had to pass many a weary hour at some country hotel, and who has had the bitter experience, *i e.*, if he be not an observer of nature in making aimless walks, or perhaps sitting about doing nothing! whereas, had he been a naturalist, his spare time could have been agreeably and profitably spent in observing and collecting some of the insects or plants of the district. To those who know how to spend their leisure both profitably and intellectually at the same time, more especially in a delightful study of nature and her handiwork, the feeling becomes one of intense pleasure. You have also the feeling that you are not only adding to your own store of knowledge, but in all probability you are making observations that may be of some use to someone else, and *that* someone will most likely be the grower. We have thus said a little—only a little to be sure—concerning the use of entomology in enabling one to know something about the insects that are destructive to crops and by which pests he may be surrounded. There is also another aspect to the question, and that is the advantage to be gained in being able to distinguish the difference between destructive and beneficial insects. Take, for example, the little Lady Bird, *Leis conformis*, which, when in the larval state is so destructive to aphids. It is no uncommon occurrence for me to receive from growers (I allude, of course, to those who have but little knowledge of the subject) these useful little creatures, as something to be dreaded, and asking to be supplied with an effective remedy. Again I have seen people shaking their best friends in the insect line on to a cloth and destroying them wholesale. Surely this must be for the want of knowing better as a very cursory glance over any aphis-infected tree will disclose the presence of numerous ugly-looking grub-like forms, busily devouring aphids in a most voracious and wholesale manner. Then there are the Hemerobidæ or lace wings, which when in the larval state, make great havoc amongst the aphids. In France we are told boys are employed to prevent the birds, chiefly sparrows, from destroying the useful little lady birds.

The *Syrphidæ* are flies whose larvæ are armed with a singular mandible furnished like a trident with 3 points with which they transfix their prey. These grubs are most destructive to aphids of all kinds. A large group of the *Hymenoptera* wasp-like insects are most merciless destroyers of many noxious ones, especially moths, whilst in the larval and chrysalid stages. They do not, however, confine their attacks to members of the moth family, as even the destructive *Cecidomyia*, or Hessian fly, has its enemies in certain minute species of a genus closely allied to the *Ichneumons*. In Europe no less than three species of these little flies are known to render valuable help in destroying valuable help in destroying the larval of this dread scourge of the wheat grower. The economy of our formidable and much despised hornets, more especially those of the genus *Sphex*, *Pompilios* and other large kinds which we know by their orange-yellow bodies, mostly bands with black, and to some of us by their stings also, is well worth observing, as they destroy centipedes, grubs (when above ground), scorpions, cicadæ, &c., and in this murderous work they have but few equals. In helping us to fight our insect pests we have powerful auxiliaries in the predatory insects of many families, also in certain parasitic fungi, which have often been utilised with the best results. You will all recollect the discovery of the little Lady Bird *Vedalia*, which the U.S. Government so promptly used for the destruction of the Cottony Cushion Scale, that arch enemy of the orange growers of California and elsewhere, and which my friend Mr Koebele and the late Frazer Crawford so persistently followed up to the great advantage of growers of the Citrus family. I have introduced the *Vedalia* to

Melbourne time after time, but owing to the voracious appetites of the accursed sparrows, which appear to relish these and but few other insects, my efforts so far have not been successful. In Victoria we have a number of beetles, especially amongst the *Carabidæ*, which both in the larval and perfect state destroy vast quantities of the grubs attacking our cereal crops, grass lands, lawns, &c. I had one of these, *Hyperion*, our largest species, which had been sent to me by a friend at Mooroopna, to show to you how it would demolish either a moth or a grub. Unfortunately, however, an unfriendly rat got into the box, the lid of which I had incautiously left off, and in the morning nothing but a few fragments were left on which I could ponder as to the wrong principle of counting one's chickens before they are hatched. Spiders also, at least a large majority of them, are very useful to growers, more especially as they are destructive to boring insects, also to those which hybernate under the bark of trees, native as well as those introduced. One of these animals *Vocconia*, often called "Tarantula" (which it is not) is a perfect glutton, as the piles of insect debris, *i.e.* wing cases, &c., will show. It would take hours for me to give you even a brief account of the many advantages to be gained by a study of economic entomology, as the subject is not only interesting and useful, but is also well nigh endless. As the time is short, I will bring this fragmentary discourse to a close by remarking that to be successful we must be practical as well as energetic, always willing to learn from those who are willing to impart their knowledge to those seeking it, and never setting ourselves up as knowing everything, remembering that we may learn something from the humblest. Do not, when you have gained a little scientific knowledge, look with a superior sort of air upon the practical grower, as he having better chances in the field than you have, may be able to teach you many a practical lesson. The time is upon us when we must use our heads as well as our hands, and the end of this will probably be as the great Chas. Darwin has told us, the "survival of the fittest." Many of the lantern views here shown are from proof plates of Part III of my work which will be brought as soon as possible. I hope also by permission of the Victorian Department of Agriculture to be able to publish at some future time, an illustrated work on the "Beneficial Insects of Victoria," as to growers this work would be nearly as important as those parts previously issued on the destructive kinds.

In conclusion, I beg to thank you for your attendance, I would like to mention, before taking my leave, that my offices having been removed to a more central and commodious place, I shall be very pleased to see any of you should you come to Melbourne. My rooms are in the New Crown Law Offices, Lonsdale Street, and in one of which is our Museum of Economic Entomology and Ornithology. To the former has lately been added a splendid collection, 14 large cases of insects, and their life histories from the South Kensington Museum, London. The entomological library which is very complete and valuable, is open to students of Economic Entomology, and I shall gladly furnish any information required by those wishing for it. I trust that a few remarks and hints, which I have hurriedly given, may be found useful as coming from one who has been a grower himself and whose sympathies are mostly identical with your own. If after a few years' time you can say that you have found the study of practical Economic Entomology and Ornithology as useful and interesting as I have found it, my labours here will not have been wholly in vain.

Census of Indigenous Plants

OF THE

GEELONG DISTRICT,

BY

G. H. ADCOCK, F.L.S., F.R.H.S.

Ranunculaceae

Ranunculus lappaceus	Smith
,, rivularis	Banks & Solander
,, aquatilis	Dodoens
,, parviflorus	Linne
Clematis microphylla	Candolle

Dilleniaceae.

Hibbertia stricta	R. Brown
,, virgata	,,
,, fasciculata	,,
,, densiflora	Mueller

Lauraceae.

Cassytha glabella	R. Brown
,, pubescens	,,
,, melantha	,,

Cruciferae.

Cakile maritima	Scopoli
Cardamine hirsuta	Linne

Violaceae.

Viola hederacea	Labillardiere
,, betonicifolia	Smith
Hymenanthera Banksii	Mueller

Pittosporeae.

Bursaria spinosa	Cavanilles
Billardiera scandens	Smith
,, cymosa	Mueller

Droseraceae.

Drosera glanduligera	Lehmann
,, pygmaea	Candolle
,, Whittakerii	Planchon
,, auriculata	Backhouse
,, peltata	Smith
,, Menziesii	R. Brown

Hypericineae.

Hypericum japonicum	Thunberg

Polygaleae.

Comesperma volubile	Labillardiere
,, calymega	,,
,, ericinum	Candolle

Tremandreae.

Tetratheca ericifolia	Smith
,, ciliata	Lindley

Rutaceae.

Correa alba	Andrews
,, speciosa	,,
,, aemula	Mueller

Zygophylleae.

Zygophyllum Billardieri	Candolle

Lineae.

Linum marginale	Cunningham

Geraniaceae.

Geranium Carolinianum	Linne
Pelargonium Australe	Willdenow
,, Rodneyanum	Mitchell
Erodium cygnorum	Nees
Oxalis corniculata	Linne

Malvaceae

Lavatera plebeja	Sims
Plagianthus pulchellus	A. Gray

Euphorbiaceae.

Poranthera microphylla	Brongniart
Amperea spartioides	,,
Phyllanthus Gunnii	J. Hooker
Adriana quadripartita	Guadichaud

Sterculiaceae.

Thomasia petalocalyx	Mueller
Lasiopetalum Baueri	Steetz

Urticaceae.

Urtica incisa	Poiret

Casuarineae.

Casuarina quadrivalvis	Labillardiere
,, suberosa	Otto and Dietrich
,, distyla	Ventenet

Sapindaceae.

Dodonaea viscosa	Linne

Stackhousieae.

Stackhousia linarifolia	Cunningham

Frankeniaceae.

Frankenia laevis	Linne

Plumbagineae.

Statice Taxanthema	Roemer & Schultes

Portulaceae.

Claytonia Australasica	Hooker
,, calyptrata	Mueller

Caryophylleae.

Stellaria pungens	Brongniart
,, glauca	Withering
Sagina apetala	Linne
Polycarpon tetraphyllum	Loefling
Spergularia rubra	Cambessedes

Amarantaceae.

Ptilotus macrocephalus	Poiret
,, spathulatus	,,
Alternanthera triandra	Lamarck
Polycnemon pentandrum	Mueller

Salsolaceae.

Salicornia australis	Solander
,, arbuscula	R. Brown
Atriplex cinereum	Poiret
,, nummularium	Lindley
Rhagodia Billardieri	R. Brown
,, nutans	,,
Enchylaena tomentosa	,,
Threlkeldia diffusa	,,
Suaeda maritima	Dumortier

Ficoideae.

Mesembrianthemum australe	Solander
,, æquilaterale	Haworth
Tetragonia expansa	Murray
,, implexicoma	J. Hooker

Polygonaceae.

Rumex Brownii	Campdera
,, bidens	R. Brown
Polygonum minus	Hudson
,, prostratum	R. Brown
,, hydropiper	Linne
Muehlenbeckia adpressa	Meissner
,, Cunninghami	Mueller

Leguminosae.

Acacia armata	R. Brown
,, acinacea	Lindley
,, vermiciflua	Cunningham
,, myrtifolia	Willdenow
,, suaveolens	,,
,, retinoides	Schlechtendal
,, pycnantha	Bentham
,, melanoxylon	R. Brown
,, implexa	Bentham
,, verticillata	Willdenow
,, decurrens (Mollissima)	,,
,, dealbata	Link
,, longifolia	Willdenow
,, stricta	,,
Gompholobium Huegelii	Bentham
,, minus	Smith
Sphærolobium vimineum	,,
Viminaria denudata	,,
Daviesia latifolia	R. Brown
,, corymbosa	Smith
,, brevifolia	Lindley
Pultenæa villosa	Willdenow
,, daphnoides	Wendland
,, mollis	Lindley
,, dentata	Labillardiere
,, stricta	Sims
,, villifera	Sieber
Dillwynia ericifolia	Smith
,, floribunda	,,
,, cinerascens	R. Brown
Aotus villosa	Smith
Platylobium formosum	,,
,, triangulare	R. Brown
,, obtusangulum	Hooker
Bossiæa cinerea	R. Brown
,, prostrata	,,
Lotus australis	Andrews
,, corniculatus	Linne
Kennedya prostrata	R. Brown
,, rubicunda	Ventenat
,, monophylla	,,
Glycine Latrobeana	Bentham
,, clandestina	Wendland
Swainsona lessertifolia	Candolle

Rosaceae.

Acæna ovina	Cunningham
Indigofera australis	Willdenow
,, sanguisorbae	Vahl.
Rubus parvifolius	Smith

Saxifrageae.

Bauera rubioides	Andrews
Tillæa macrantha	I. Hooker
,, purpurata	,,
,, verticillaris	Candolle

Onagreae.

Epilobium tetragonum	Linne

Salicarieae.

Lythrum Salicaria	Linne
„ hyssopifolia	„

Halorageae.

Haloragis tetragyna	R. Brown
„ teucrioides	A. Gray
Myriophyllum integrifolium	I. Hooker
„ variifolium	„
„ elatinoides	Guadichaud
„ Muelleri	Sonder
Callitriche verna	Linne

Myrtaceae.

Eucalyptus amygdalina	Labillardiere
„ polyanthema	Schauer
„ leucoxylon	Mueller
„ viminalis	Labillardiere
„ rostrata	Schlechtendal
„ obliqua	C. Heritier
Melaleuca ericifolia	Smith
„ parviflora	Lindley
Leptospermum lævigatum	Mueller
„ scoparium	R. & G. Forster
„ lanigerum	Smith
„ myrsinoides	Schlechtendal
Callistemon salignus	Candolle
Calycothrix tetragona	Labillardiere

Rhamnaceae.

Cryptandra tomentosa	Lindley
„ amara	Smith
Pomaderris racemosa	Hooker
„ apetala	Labillardiere

Umbelliferae.

Hydrocotyle laxiflora	Candolle
„ callicarpa	Bunge
„ capillaris	Mueller
Apium prostratum	Labillardiere
Xanthosa pusilla	Bunge
Daucus brachiatus	Sieber
Eryngium rostratum	Cavanilles
„ vesiculosum	Labillardiere

Santalaceae.

Exocarpos cupressiformis	Labillardiere

Proteaceae.

Isopogon ceratophyllus	R. Brown
Persoonia juniperina	Labillardiere
Hakea ulicina	R. Brown
„ acicularis	„
Banksia marginata	Cavanilles
„ integrifolia	Linne fil
Grevillea floribunda	R. Brown
Lomatia ilicifolia	„

Loranthaceae.

Loranthus pendulus	Sieber
„ linophyllus	Fenzl

Thymeleae.

Pimelea curviflora	R. Brown
„ octophylla	„
„ glauca	„
„ humilis	„
„ serpyllifolia	„
„ stricta	Meissner
„ phyllicoides	„
„ linifolia	Smith

Rubiaceae.

Coprosma Billardieri	I. Hooker
Opercularia varia	„
Asperula oligantha	Mueller
Galium umbrosum	Solander

Caprifoliaceae.

Sambucus Guadichaudiana	Candolle

Compositae.

Lagenophora Billardieri	Cassini
„ Huegelii	Bentham
Brachycome diversifolia	Fischer & Meyer
„ graminea	Mueller
„ decipiens	I. Hooker
„ ciliaris	Lessing
„ cardiocarpa	Mueller
Aster argophyllus	Labillardiere
„ axillaris	Mueller
„ stellulatus	Labillardiere
„ ramulosus	Labillardiere
„ teretifolius	Mueller
Vittadinia australis	A. Richard
Calotis scapigera	Hooker
„ scabiosifolia	Sonder & Mueller
Gnaphalium luteo-album	Linne
„ indutum	J. Hooker
„ Japonicum	Thunberg
Stuartina Muelleri	Sonder
Leptorrhynchos squamatus	Lessing
„ tenuifolius	Mueller
Podolepis acuminata	R. Brown
Helipterum dimorpholepis	Bentham
„ exiguum	Mueller
Helichrysum scorpioides	Labillardiere
„ obtusifolium	Sonder & Mueller
„ lucidum	Henckel
„ leucopsidium	Candolle
„ apiculatum	„
„ semipapposum	„
„ cinereum	Mueller
„ ferrugineum	Lessing
Cassinia aculeata	R. Brown
Ixodia achilleoides	„
Millotia tenuifolia	Cassini

Calocephalus Brownii	Mueller
,, lacteus	Lessing
Craspedia Richea	Cassini
,, chrysantha	Bentham
Siegesbeckia orientalis	Linne
Cotula coronopifolia	,,
,, reptans	Bentham
Centipeda Cunninghami	Mueller
Senecio lautus	Solander
,, velleioides	Cunningham
,, dryadeus	Sieber
,, brachyglossus	Mueller
Erechtites arguta	Candolle
,, quadridentata	,,
Cymbonotus Lawsonianus	Guadichaud
Podotheca angustifolia	Lessing
Angianthus Preissianus	Bentham

Campanulaceae.

Lobelia simplicicaulis	R. Brown
,, rhombifolia	De Vriese
,, anceps	Thunberg
,, pratioides	Bentham
,, platycalyx	Mueller
Isotoma fluviatilis	,,
Wahlenbergia gracilis	Candolle

Candollaceae.

Candollea serrulata	Labillardiere
,, perpusilla	Mueller
,, despecta	,,
Leewenhoekia dubia	Sonder

Goodeniaceae.

Brunonia australis	Smith
Scaevola microcarpa	Cavanilles
Selliera radicans	,,
Goodenia ovata	Smith
,, pinnatifida	Schlechtendal
,, geniculata	R. Brown
Velleya paradoxa	,,

Gentianeae.

Limnanthemum exaltatum	Mueller
Sebaea albidiflora	,,
,, ovata	R. Brown
Erythraea australis	,,

Loganiaceae.

Mitrasacme paradoxa	R. Brown
,, distylis	Mueller

Plantagineae.

Plantago varia	R. Brown

Primualceae.

Samolus repens	Persoon

Apocyneae.

Alyxia buxifolia	R. Brown

Convolvulaceae.

Convolvulus erubescens	Sims
Wilsonia humilis	R. Brown
,, Backhousii	J. Hooker
Dichondra repens	R. & G. Forster

Solanaceae.

Solanum nigrum	Linne
,, aviculare	G. Forster
Nicotiana suaveolens	Lehmann

Scrophularinae.

Mimulus repens	R. Brown
Veronica gracilis	,,
,, Derwentia	Littlejohn
,, calycina	R. Brown
Mazus pumilis	,,
Gratiola Peruviana	Linne
Limosella aquatica	,,
Euphrasia scabra	R. Brown
,, Brownii	Mueller

Lentibularinae.

Utricularia dichotoma	Labillardiere
Polypompholyx tenella	Lehmann

Asperifoliae.

Myosotis suaveolens	Poiret
Cynoglossum suaveolens	R. Brown

Labiatae.

Plectranthus parviflorus	Willdenow
Mentha australis	R. Brown
,, gracilis	,,
Scutellaria humilis	,,
Ajuga australis	,,
Teucrium corymbusum	,,
Prostanthera nivea	Cunningham

Verbenaceae.

Verbena officinalis	Linne
Avicennia officinalis	,,

Myoporinae.

Myoporum viscosum	R. Brown
,, insulare	,,

Epacrideae.

Styphelia humifusa	Persoon
,, Richei	Labilladiere
,, virgata	,,
,, strigosa	Smith
Brachyloma ciliatum	Bentham
Epacris impressa	Labillardiere
,, obtusifolia	Smith
Sprengelia incarnata	,,

Coniferae.

Callitris verrucosa	R. Brown

Orchideae.

Dipodium punctatum	R. Brown
Thelymitra ixioides	Swartz
,, epipactoides	Mueller
,, aristata	Lindley
,, longifolia	R. & G. Forster
,, carnea	R. Brown
,, flexuosa	Endlicher
,, antennifera	J. Hooker
Diuris punctata	Smith
,, maculata	,,
,, pedunculata	R. Brown
,, sulphurea	,,
,, longifolia	,,
Orthoceras strictum	,,
Calochilus Robertsoni	Bentham
Prasophyllum elatum	R. Brown
,, patens	,,
,, fuscum	,,
Microtis porrifolia	,,
,, atrata	,,
Pterostylis concinna	,,
,, nutans	,,
,, mutica	,,
Caleya major	,,
Acianthus exsertus	,,
Cyrtostylis reniformis	,,
Eriochilus autumnalis	,,
Caladenia Menziesii	,,
,, Patersoni	,,
,, latifolia	,,
,, deformis	,,
,, carnea	,,
Glossodia major	,,

Irideae.

Patersonia glauca	,,
Sisyrinchium pulchellum	,,

Hydrocharideae.

Halophila ovata	Guadichaud
Ottelia ovalifolia	L. C. Richard
Vallisneria spiralis	Linne

Amaryllideae.

Hypoxis glabella	R. Brown
,, hygrometrica	Labillardiere

Liliaceae.

Dianella revoluta	R. Brown
Wurmbea dioica	Mueller
Burchardia umbellata	R. Brown
Bulbine bulbosa	Haworth
Thysanotus tuberosus	R. Brown
,, Patersoni	,,
Caesia vittata	,,
Chamaescilla corymbosa	Mueller
Tricoryne elatior	R. Brown
Stypandra caespitosa	,,
Arthropodium minus	,,
,, strictum	,,
Xerotes longifolia	,,
,, Thunbergi	Mueller
Xanthorrhoea minor	R. Brown
,, australis	,,

Typhaceae.

Typha angustifolia	Linne
Sparganium angustifolium	R. Brown

Lemnaceae.

Lemna minor	Linne

Fluviales.

Triglochin striata	Ruiz & Pavon
,, mucronata	R. Brown
,, procera	,,
Potamogeton natans	Linne
,, obtusifolius	Mertens & Koch
,, crispus	Linne
,, pectinatus	,,
Ruppia maritima	,,
Zostera nana	Mertens
,, Tasmanica	G. V. Martens
Lepilaena Preissii	Mueller
Cymodocea zosterifolia	,,

Xyrideae.

Xyris gracilis	R. Brown

Junceae.

Luzula campestris	Candolle
Juncus planifolius	R. Brown
,, bufonius	Linne
,, homolocaulis	Mueller
,, pallidus	R. Brown

Cyperaceae.

Cyperus lucidus	R. Brown
Scirpus lacustris	Linne
,, nodosus	Rottboell
,, fluitans	Linne
,, inundatus	Sprengel
,, riparius	,,
Chorizandra enodis	Nees
Gahnia juncea—Cladium junceum	R. Brown
,, schoenoides	,,
,, radula	,,
,, glomerata	
,, filum	
Schoenus melanostachys	,,
Lepidospora tenuissima	Mueller
Lepidosperma gladiatum	Labillardiere
,, concavum	R. Brown
Carex caespitosa	
,, tereticaulis	Mueller
,, paniculata	Linne
,, pumila	Thunberg

Restiaceae.

Centrolepis aristata	Roem & Schultes
,, strigosa	,,
Calostrophus fastigiatus	Mueller

Gramineae.

Panicum prolutum	Mueller
Spinifex hirsutus	Labillardiere
Themeda triandra	Forskoel
Lepturus incurvatus	Trinius
Imperata arundinacea	Cyrillo
Alopecurus geniculatus	Linne
Stipa pubescens	R. Brown
,, setacea	,,
Agrostis Solandri	Mueller
,, quadriseta	R. Brown
Danthonia penicillata	Mueller
,, carphoides	,,
Cynodon Dactylon	L. C. Richard
Poa caespitosa	G. Forster
Festuca litoralis	Labillardi
Distichlis maritima	Rafinesque
Arundo Phragmites	Dodoens

Rhizospermae.

Azolla filiculoides	Lamarck
Pilularia globulifera	Linne

Lycopodineae.

Selaginella Preissiana	Sprengel
,, uliginosa	,,

Filices.

Lindsaya linearis	Swartz
Cheilanthes tenuifolia	,,
Adiantum Æthiopicum	Linne
Pteris aquilina	,,
Asplenium flabellifolium	Cavanilles
Grammitis rutifolia	R. Brown

Arthur B. F. Wilson. Esq.,
Geelong, Victoria.

My Dear Mr. Wilson.

After a careful comparison of the three examples of "Tupong" kindly sent to me by you from Victorian waters, with two Tasmanian specimens in my possession, I am able to announce authoritatively that the continental and insular forms are inseparable; and further, that, owing to its previous employment by Latreille for a genus of dipterous insects, the use of *Aphritis* is inadmissable, and, our fish must therefore in future be known as *Pseudaphritis urvillii.* I am reading a paper on the subject at the next meeting of our Linnean Society, which I shall send when printed.

I remain, sincerely yours,

J. DOUGLAS OGILBY.

Livingstone Road,
Petersham,
15th September, 1897.

* * *

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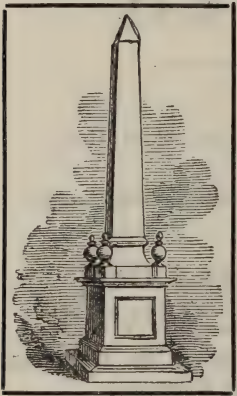

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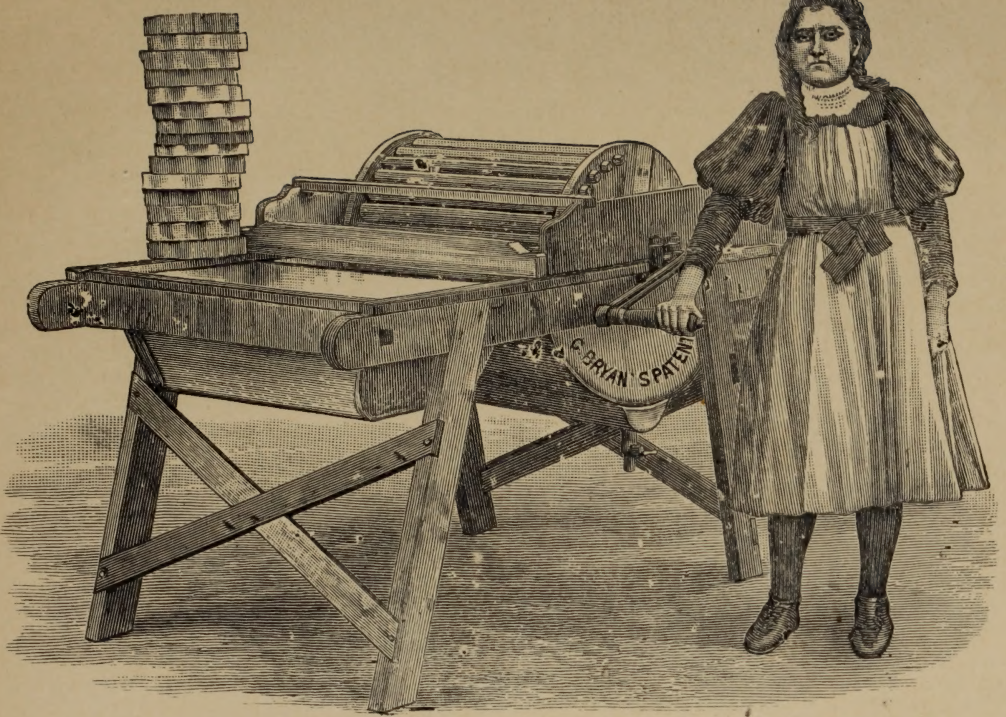

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